CLAIMS

We claim:

1. Apparatus for ion implantation, comprising:

a source of ions having a first axis;

a workpiece holder configured for mechanical scanning in linear motion along a path of motion perpendicular to the first axis;

selectively adjustable rotation control structure for use in rotating a workpiece using the path of motion as an axis of rotation to orient an implant surface on the workpiece at a selected angle of rotation when the workpiece is mounted on the workpiece holder; and

a beam measuring device configured for scanning along an intended location of the implant surface to provide a setup measurement coincident with the intended location.

2. The apparatus as set forth in claim 1, the source of ions comprising a parallel path fan beam having a two dimensional cross section normal to the first axis that is at least twice as large in one dimension than another.

3. The apparatus as set forth in claim 1, further comprising:

at least one charge neutralization member selected from the group consisting of an electron flood gun and a plasma bridge directed toward the workpiece holder for neutralization of beam charge buildup, and

a rotatable mechanism configured to maintain the charge neutralization member in corresponding rotational alignment with the workpiece holder.

4. The apparatus as set forth in claim 3, the rotatable mechanism being in alignment with the path of motion such that the rotatable mechanism can be rotated in linear alignment with the selectively adjustable rotation control structure so that an orientation of its spacing to the workpiece surface is maintained as a constant spacing.

5. The apparatus as set forth in claim 3, the rotatable mechanism comprising an arm adapted to maintain a constant spacing between the workpiece holder and the charge neutralization member.

6. A method for ion implantation of a workpiece comprising the steps of:

generating an ion beam perpendicular to a first XY plane having an X-axis and a Y-axis;

identifying a second plane by rotating the first XY plane about the Y-axis;

measuring the effective ion beam intensity along a line in the second plane to provide a beam intensity signal; and

adjusting the ion beam based upon the beam intensity signal to obtain an adjusted ion beam having a desired ion beam intensity along the line in the second plane;

rotating the workpiece to present an implant surface in alignment with the second plane; and

translating the rotated workpiece along the Y axis to pass the workpiece through the adjusted ion beam to accomplish ion implantation in the workpiece.

7. The method according to claim 6, further comprising the step of:

positioning a charge neutralization device in a position of rotational alignment with the workpiece.